

# Biomarkers conference

## Health policy

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# Health policy and economic evaluation

- ➔ Maximizing a health output under budget constraint
- ➔ Negotiation process with stakeholders and their own maximization strategies

# What is economic evaluation?

- ➔ Relationship between a medical outcome and the resources required to achieve this outcome
- ➔ Comparative analysis of options, their consequences and their costs
- ➔ Maximization of health output under resource constraints
- ➔ (ref: Drummond, Stoddart, Torrance)

# Effectiveness criteria

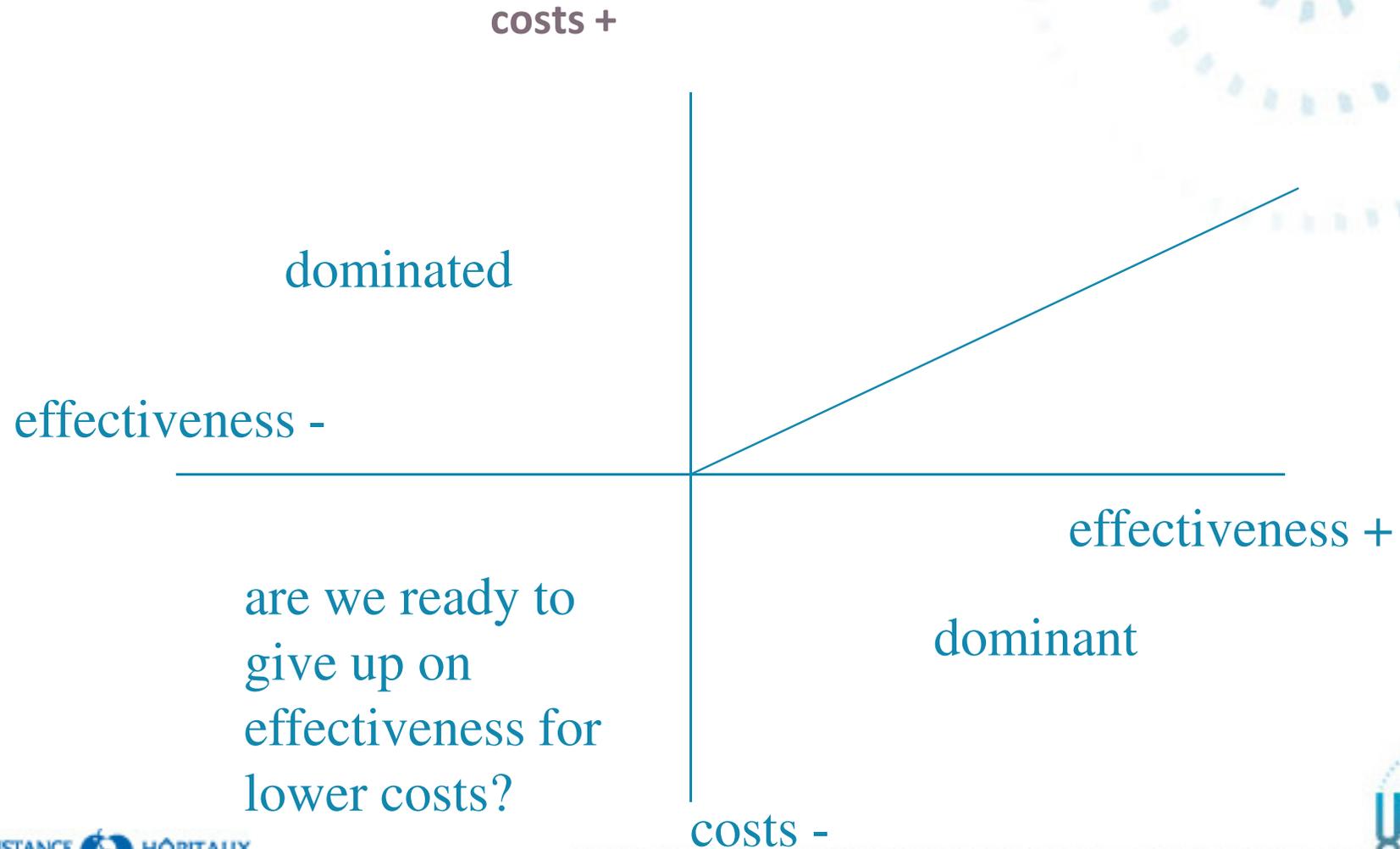
## → Life expectancy and QoL

- Life year gained
- QALYs
- Progression-free survival, TWIST and Q-TWIST

## → Other

- Confirmed diagnoses
- Contribution to patient management (K-RAS mutation, diagnostic imaging )
- Contribution to genetic counselling (mt-DNA)

## II- Economic evaluation



# Thresholds

**COST**

+

3-5 x per capita GDP  
per QALY  
£50,000 per QALY

**effectiveness +  
cost ++**

**effectiveness ++  
cost ++**

1x per capita GDP  
30,000 €  
per QALY

**effectiveness ++ cost +**

**effectiveness +**

# The case of Herceptin,1

→ Dendukuri N, Khetani K, Mclsaac M, Brophy J. Testing for HER2-positive breast cancer: a systematic review and cost-effectiveness analysis. CMAJ. 2007;17:1429-34.

→ **HER2 status**

→ **Immunohistochemistry and/or FISH**

→ **7 diagnostic strategies tested**

→ **For 1,000 women , 211 true HER**

→ **IHC 3+ = 162 of whom 12 FP**

→ **IHC 2+ = 120 of whom 86 FP**

# Herceptin, 2

## ➔ Preferred strategy

- IHC 3+ and FISH
- IHC 2 + and FISH

## ➔ Cost of FISH = 135 €

## ➔ Application to France

- 42,000 breast cancer patients, 8,900 true HER +
- Cost of 8 cycles HER = 23 K€
- Total cost IHC 3+ FP (504 patients) = 11.6 M €
- Added cost of FISH for all IHC 3+ < 1 million €

# Kidney cancer and antiangiogenics

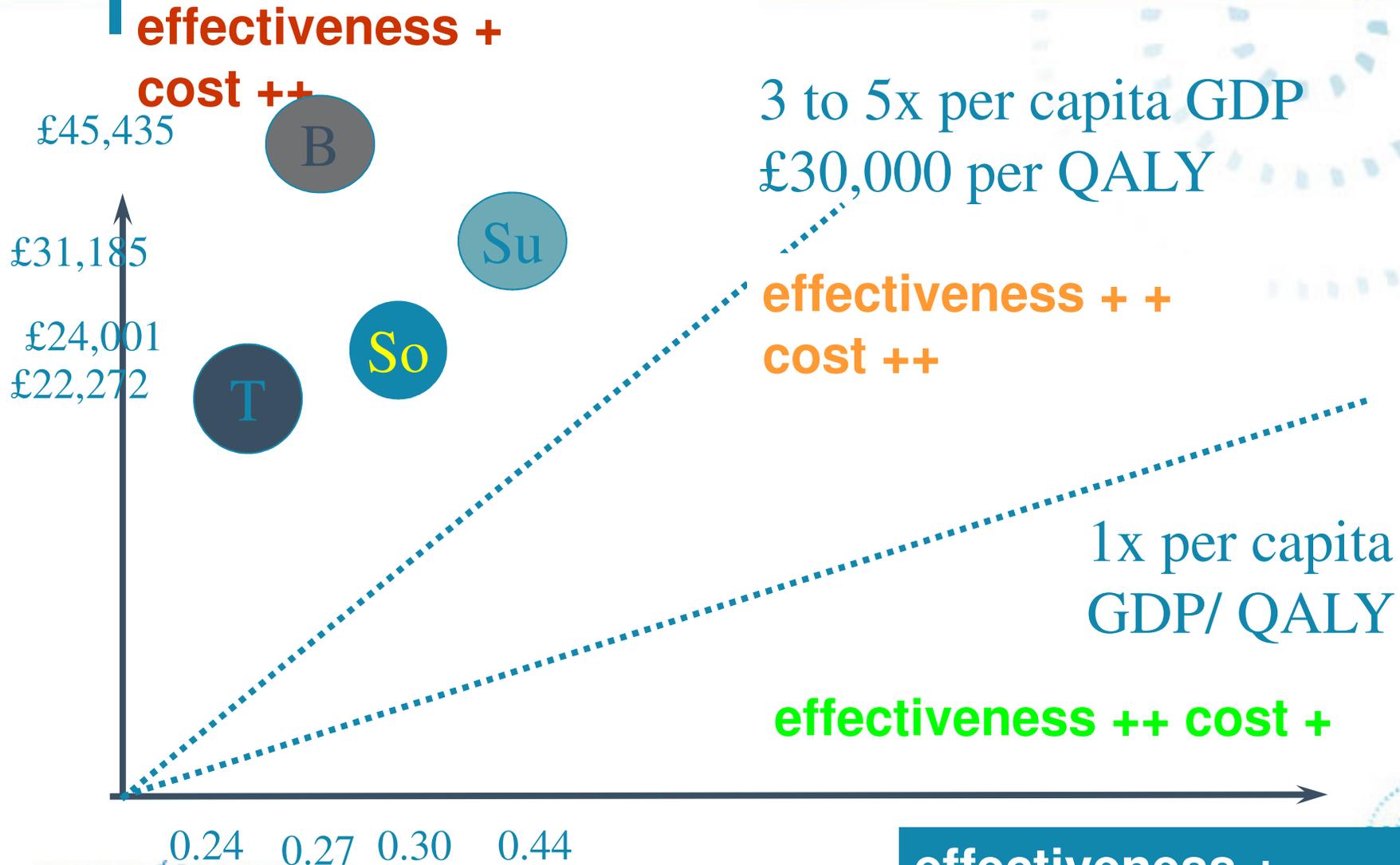
- ➔ Professor Peter Littlejohns, the clinical and public health director of NICE said the institute took account of how much extra a new drug would cost to produce an extra year of healthy life. The four kidney drugs cost up to six times the normal NHS limit of about £30,000 a patient per quality-adjusted life year.
- ➔ He added: "Although these treatments are clinically effective, regrettably, the cost to the NHS is such that they are not a cost-effective use of NHS resources."

# Renal cell carcinoma - bevacizumab, sorafenib, sunitinib and temsirolimus

<http://www.nice.org.uk/nicemedia/pdf/RenalCellCarcinomaACDAssessment.pdf>

- ➔ *sunitinib vs IFN as first line therapy*    **£71,462 per QALY**
- ➔ *bevacizumab plus IFN vs. IFN as first line therapy*    **£171,301 per QALY**
- ➔ *temsirolimus vs. IFN as first line therapy in patients with poor prognosis*    **£94,385 per QALY**
- ➔ *sorafenib vs. BSC as second line therapy*    **£102,498 per QALY**

# COST Bevacizumab, Sunitinib, Temsirolimus, Sorafenib



## Health policy (*BMJ* 2009;338:b3).

- ➔ NICE recommends kidney cancer drug it previously rejected on cost grounds
- ➔ NICE has recently introduced new arrangements for taking into account the added value that society puts on treatments that extend life.
- ➔ These state that treatments with demonstrable benefits in terms of survival can be recommended for patients who are not expected to live more than 24 months, even if the incremental cost effectiveness ratio exceeds the current limit of £30 000 per QALY gained

# Prostate cancer: 2 major studies published in 2009

- ➔ Andriole GL, Crawford ED, Grubb RL 3rd, Buys SS, Chia D, Church TR, et al. Mortality results from a randomized prostate-cancer screening trial. *N Engl J Med* 2009;360:1310-9.
- ➔ Schröder FH, Hugosson J, Roobol MJ, Tammela TL, Ciatto S, Nelen V, et al. Screening and prostate-cancer mortality in a randomized European study. *N Engl J Med* 2009;360:1320-8.
- ➔ Europe: 162 387 men screening at an average of once every 4 years vs control group
- ➔ Etats-Unis: 76,693 men at 10 U.S. study centers to receive either annual screening (38,343 subjects) or usual care as the control (38,350 subjects)
- ➔ Follow up 7 to 10 years

# Results

## → European study:

- 214 death in the screening group vs 326 in the control group
- $\frac{3}{4}$  PSA positive tests were false positives
- 1410 men would need to be screened and 48 additional cases of prostate cancer would need to be treated to prevent one death from prostate cancer

## → USA study

- No benefit to screening
- Overdiagnosis (competitive risks)
- Overtreatment

# Public health vs individual perspectives

- ➔ A 61 year old man with a true positive screening test and appropriate management will gain 10 years of life
- ➔ Given that 1410 men must be screened to prevent one death, screening would provide an average survival gain of about 2.6 days per man screened

# Useful theories in political economy

M Goddard et al. Health economics, policy and law, 2006

- ➔ Rationality: C/E
- ➔ Majority voting models
- ➔ Interest groups
- ➔ Bureaucratic decision making
- ➔ Rent seeking professionals

# Conclusion

- ➔ **Prioritization is a negotiation process, the list of endpoints is a negotiation tool**
- ➔ **The actual priorities reveal the values and the policy of the government**